ABSTRACT OF THE DISCLOSURE

Methods for adaptive real time control of a system for thermal processing substrates, such as semiconductor wafers and display panels. Generally, the method includes creating a dynamic model of the thermal processing system, incorporating wafer bow in the dynamic model, coupling a diffusion-amplification model into the dynamic thermal model, creating a multivariable controller, parameterizing the nominal setpoints, creating a process sensitivity matrix, creating intelligent setpoints using an efficient optimization method and process data, and establishing recipes that select appropriate models and setpoints during run-time.